

This listing of claims will replace all prior versions, and listings, of claims in this application.

Listing of the claims:

2. (Previously Amended) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:
said probe is labeled at an end portion thereof with said fluorescent dye, and
said probe has a base sequence designed such that, when said probe is hybridized with said target nucleic acid, at least one G (guanine) base exists in a base sequence of said target nucleic acid at a position 1 to 3 bases apart from an end base portion where said probe and said target nucleic acid are hybridized with each other;
whereby said fluorescent dye is reduced in fluorescence emission when said probe is hybridized with said target nucleic acid, wherein said fluorescent dye is selected from the group consisting of 6-joe, BODIPY TMR, Alexa 488, and Alexa 532.
3. (Previously Amended) The nucleic acid probe according to claim 2, wherein said probe is labeled at a 3' end thereof with said fluorescent dye.
4. (Previously Amended) The nucleic acid probe according to claim 2, wherein said probe is labeled at a 5' end thereof with said fluorescent dye.
5. (Currently Amended) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:
said probe is labeled at an end portion thereof with said fluorescent dye, and
said probe has a base sequence designed such that, when said probe is hybridized with said target nucleic acid, base pairs in a probe-nucleic acid hybrid complex form at least one G (guanine) and C (cytosine) pair at said end portion;
whereby said fluorescent dye is reduced in fluorescence emission when said probe is

hybridized with said target nucleic acid, wherein said probe can be further extended at it's 3'-end by a DNA polymerase, wherein said fluorescent dye is selected from the group consisting of BODIPY FL, BODIPY FL/C3, 6-joe, BODIPY TMR, BODIPY FL/C6, Alexa 488, and Alexa 532.

6. (Previously Amended) The nucleic acid probe according to claim 5, wherein said probe has G or C as a 3' end base and is labeled at said 3' end thereof with said fluorescent dye.

7. (Previously Amended) The nucleic acid probe according to claim 5, wherein said probe has G or C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye.

8. (Previously Amended) The nucleic acid probe according to claim 4, wherein a hydroxyl group of a 2' or 3' carbon of a ribose or a 3' carbon of a deoxyribose at 3' end of said probe has been phosphorylated.

9. (Previously Amended) The nucleic acid probe according to claim 2 or claim 5, wherein an oligoribonucleotide of said probe is a chemically-modified nucleic acid.

10. (Previously Amended) The nucleic acid probe according to claim 2 or claim 5, wherein an oligonucleotide of said probe is a chemiric oligonucleotide comprising a ribonucleotide and a deoxyribonucleotide.

11. (Previously Amended) The nucleic acid probe according to claim 10, wherein said ribonucleotide is a 2'-O-methyloligoribonucleotide.

15. (Previously Amended) A kit for analyzing or determining polymorphism or mutation of a target nucleic acid or gene, comprising a nucleic acid probe according to claim 2 or claim 5.

21. (Previously Amended) The kit according to claim 15, further comprising a helper probe for being added to a hybridization reaction system.

23. (Previously Amended) A device for determining concentrations of nucleic acids,

comprising:

a solid support, and

a nucleic acid probe according to claim 2 or claim 5 or a different nucleic acid probe bound on a surface of said solid support, said different nucleic acid probe having a structure designed such that said probe comprises two fluorescent dyes of different kinds in a molecule and that, owing to interaction between said two fluorescent dyes, said probe quenches or emits fluorescence when said probe is not hybridized with said target nucleic acid but emits fluorescence or quenches when said probe is hybridized with said target nucleic acid;

whereby said device can determine said concentration of said target nucleic acid by hybridizing said target nucleic acid to said probe or said different probe.

24.(Previously Amended) The device according to claim 23, wherein said probes or said different probes are arranged and bound in an array pattern on said surface of said solid support.

25.(Previously Amended) The device according to claim 23, wherein said probes or different probes bound on said surface of said solid support are each independently provided with at least one temperature sensor and at least one heater arranged on an opposite surface of said solid support such that an area of said solid support, where said probe or different probe is bound, can be controlled to meet optimal temperature conditions.

26.(Previously Amended) The device according to claim 23, wherein said probe or different probes are bound at end portions, where said probes or different probes are labeled with no fluorescent dye on said surface of said solid support.

47. (Previously Amended) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:

said probe is labeled at an end portion thereof with said fluorescent dye, and

said probe has a base sequence designed such that, when said probe is hybridized with said target nucleic acid, base pairs in a probe-nucleic acid hybrid complex form at least one G (guanine) and C (cytosine) pair at said end portion;

whereby said fluorescent dye is reduced in fluorescence emission when said probe is hybridized with said target nucleic acid, wherein said probe has G or C as a 3' end base and is labeled at said 3' end thereof with said fluorescent dye, wherein said fluorescent dye is selected from the group consisting of 6-joe, BODIPY TMR, Alexa 488, and Alexa 532.

48. (Previously Amended) The nucleic acid probe according to claim 47, wherein said probe has G or C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye.

49. (Previously Added) The nucleic acid probe according to claim 48, wherein a hydroxyl group of a 2' or 3' carbon of a ribose or a 3' carbon of a deoxyribose at 3' end of said probe has been phosphorylated.

50. (Previously Amended) The nucleic acid probe according to claim 47, which comprises a chemically-modified nucleic acid.

51. (Previously Amended) The nucleic acid probe according to claim 47, wherein an oligonucleotide of said probe is a chimeric oligonucleotide comprising a ribonucleotide and a deoxyribonucleotide.

52. (Previously Added) The nucleic acid probe according to claim 51, wherein said ribonucleotide is a 2'-O-methyloligoribonucleotide.

53. (Previously Added) A kit for analyzing or determining polymorphism or mutation of a target nucleic acid or gene, comprising a nucleic acid probe according to claim 47.

54. (Previously Added) The kit according to claim 53, further comprising a helper probe for being added to a hybridization reaction system.

55. (Previously Added) A device for determining concentrations of nucleic acids,

comprising:

a solid support, and

a nucleic acid probe according to claim 47 or a different nucleic acid probe bound on a surface of said solid support, said different nucleic acid probe having a structure designed such that said probe comprises two fluorescent dyes of different kinds in a molecule and that, owing to interaction between said two fluorescent dyes, said probe quenches or emits fluorescence when said probe is not hybridized with said target nucleic acid but emits fluorescence or quenches when said probe is hybridized with said target nucleic acid;

whereby said device can determine said concentration of said target nucleic acid by hybridizing said target nucleic acid to said probe or said different probe.

56. (Previously Added) The device according to claim 55, wherein said probes or said different probes are arranged and bound in an array pattern on said surface of said solid support.

57. (Previously Added) The device according to claim 55 or claim 56, wherein said probes or different probes bound on said surface of said solid support are each independently provided with at least one temperature sensor and at least one heater arranged on an opposite surface of said solid support such that an area of said solid support, where said probe or different probe is bound, can be controlled to meet optimal temperature conditions.

58. (Previously Added) The device according to claim 55 or claim 56, wherein said probe or different probes are bound at end portions, where said probes or different probes are labeled with no fluorescent dye on said surface of said solid support.

60. (Previously Added) A nucleic acid probe for determining a concentration of a target nucleic acid, said probe being labeled with a fluorescent dye, wherein:

said probe is labeled at an end portion thereof with said fluorescent dye, and

said probe has a base sequence designed such that, when said probe is hybridized with

said target nucleic acid, base pairs in a probe-nucleic acid hybrid complex form at least one G (guanine) and C (cytosine) pair at said end portion;

wherein said fluorescent dye is reduced in fluorescence emission when said probe is hybridized with said target nucleic acid, wherein said probe has C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye, and a hydroxyl group of a 2' or 3' carbon of a ribose, or a 3' carbon of a deoxyribose at the 3' end of said probe is phosphorylated, wherein said fluorescent dye is selected from the group consisting of BODIPY FL, BODIPY FL/C3, 6-joc, BODIPY TMR, BODIPY FL/C6, Alexa 488, and Alexa 532.

61. (Previously Added) The nucleic acid probe according to claim 60, wherein said probe has G or C as a 5' end base and is labeled at said 5' end thereof with said fluorescent dye.

62. (Previously Added) The nucleic acid probe according to claim 61, wherein a hydroxyl group of a 2' or 3' carbon of a ribose or a 3' carbon of a deoxyribose at 3' end of said probe has been phosphorylated.

63. (Previously Added) The nucleic acid probe according to claim 60, wherein an oligoribonucleotide of said probe is a chemically-modified nucleic acid.

64. (Previously Amended) The nucleic acid probe according to claim 60, wherein an oligonucleotide of said probe is a chimeric oligonucleotide comprising a ribonucleotide and a deoxyribonucleotide.

65. (Previously Added) The nucleic acid probe according to claim 64, wherein said ribonucleotide is a 2'-O-methyloligoribonucleotide.

66. (Previously Added) A kit for analyzing or determining polymorphism or mutation of a target nucleic acid or gene, comprising a nucleic acid probe according to claim 60.

67. (Previously Added) The kit according to claim 66, further comprising a helper probe for being added to a hybridization reaction system.

68. (Currently Amended) A device for determining concentrations of nucleic acids, comprising:

a solid support, and

a nucleic acid probe according to claim 60 or a ~~different nucleic acid probe~~ bound on a surface of said solid support, said ~~different nucleic acid~~ probe having a structure designed such that said probe comprises two fluorescent dyes of different kinds in a molecule and that, owing to interaction between said two fluorescent dyes, said probe quenches or emits fluorescence when said probe is not hybridized with said target nucleic acid but emits fluorescence or quenches when said probe is hybridized with said target nucleic acid;

whereby said device can determine said concentration of said target nucleic acid by hybridizing said target nucleic acid to said probe or said ~~different probe~~.

69. (Currently Amended) The device according to claim 68, wherein said probes or said ~~different probes are~~ is arranged and bound in an array pattern on said surface of said solid support.

70. (Currently Amended) The device according to claim 68 or claim 69, wherein said probes or ~~different probes~~ bound on said surface of said solid support are each independently provided with at least one temperature sensor and at least one heater arranged on an opposite surface of said solid support such that an area of said solid support, where said probe or ~~different probe~~ is bound, can be controlled to meet optimal temperature conditions.

71. (Currently Amended) The device according to claim 68 or claim 69, wherein said probe or ~~different probes are~~ is bound at end portions, where said probes or ~~different probes are~~ is labeled with no fluorescent dye on said surface of said solid support.